

REMARKS

The Title of the Invention has been amended. Claims 1, 2, 12, 28, 29, 44, 59, 65 and 66 have been amended to address Examiner's concerns. Claims 18 and 60 have been cancelled. Claims 1-17, 19-59, and 61-66 remain in the application. Further examination and reconsideration of the application, as amended, is hereby requested.

On Page 2 of the Office Action, the Examiner objected to the Title as being non-descriptive. Applicants have amended the Title to make it more descriptive of at least one aspect of Applicant's invention.

On page 2 of the Office Action, the Examiner objected to claim 18 as being in improper dependent form for failing to further limit the subject matter of a previous claim. Applicants have cancelled claim 18.

On page 2 of the Office Action, the Examiner rejected claims 1-11 under 35 USC 112, 2nd paragraph as being incomplete for omitting essential structural cooperative relationships of elements. Applicants have amended claim 1 to incorporate structural cooperative relationships. Support for these limitations are found throughout the specification and in particular on page 5, line 14 to page 6 line 14.

Also, on page 3, the Examiner states that claim 28 recites the limitation "one display device" lacks antecedent basis. Applicants have amended claim 28 to correctly depend from claim 27 as assumed by the Examiner.

On Page 3, the Examiner rejected claims 12, 14, 27-29, 42-44 and 57-59 under 35 USC 102(e) as being anticipated by Moyer et al (hereafter Moyer).. Applicants have amended their claims to further distinguish and define their invention over Moyer and other art made of record. Applicants have amended independent claims 12, 29, 44, and 59 to include the limitation of a "dielectric layer" disposed on the lens layer or means for focusing and also that the shield layer or means for shielding is disposed on the dielectric layer. These limitations are not disclosed, taught, or suggested by Moyer. Nor would it be obvious to modify Moyer because Moyer teaches away from Applicants' claimed invention. As MPEP 2141.02 states "a prior art reference must be considered in its entirety, i.e., as a whole including portions that would lead away from the claimed invention."

For instance, Moyer's vacuum bridge which the Examiner asserts is equivalent to Applicants' shield layer (which Applicants respectfully traverse as the vacuum bridge is described as a focusing structure and not a shield layer (col.3 lines 43-50)) is disclosed as self-supporting. According to Moyer, this self-supporting characteristic removes the necessity for additional support layers (col. 2, lines 62-64) such as Applicants' dielectric layer. According to Moyer, the vacuum bridge is removed far from the other electrodes to reduce capacitance and improve power requirements. Also, Moyer states that by removing additional support layers, the risk of introducing contaminants is reduced (see col. 2, line 64 to col. 3, line 4). By having a shield layer disposed on a dielectric layer over the lens layer, the Applicants are able to still maintain a tight focus while at the same time minimizing the distance between the lens layer and the shield layer, allowing it to be fabricated in an integrated circuit process. Moyer instead tries to position the vacuum bridge a maximum distance between the vacuum bridge and the cathode plate (see col. 4, lines 42-48, and col. 5 lines 25-35).

Further, the Applicants are claiming that the shield layer is about the same potential as the anode layer in order to reduce the electrostatic attraction between the anode and the focusing lens. The Examiner states "the use of a shield layer with any positive voltage serves to reduce the electrostatic attraction between the lens layer and the anode." Moyer, however, describes the anode at about 4000 volts, the gate electrodes at 80 volts and the vacuum bridge focusing structure at about ground potential (col. 5, lines 13-20). The difference of about 4000 volts between the vacuum bridge and the anode show that the vacuum bridge is being used as a focusing structure and not a shield layer as Applicants are claiming. This ground potential is actually less than the gate electrode potential and thus increases electrostatic attraction, not minimizing it as Applicants describe and claim.

Claims 14, and 27-28 depend directly or indirectly on claim 12 and thus are deemed patentable based at least on the patentability of claim 12, as amended.

Claims 42 and 43 depend directly or indirectly on claim 29 and thus are deemed patentable based at least on the patentability of claim 29, as amended.

Claims 57 and 58 depend directly or indirectly on claim 44 and thus are deemed patentable based at least on the patentability of claim 44, as amended.

Accordingly, the Applicants believe claims 12, 14, 27-29, 42-44 and 57-59, as amended, are patentable over the art made of record. Withdrawal of the rejection under 35 USC 102(e) and allowance of these claims is respectfully requested.

On Page 4 of the Office Action, the Examiner rejected claims 29, 33, 38, 42, and 43 under 35 USC 102(b) as being anticipated by Chen. Applicants respectfully traverse this rejection. The Examiner asserts that G5 in Chen is an anode. Applicants' respectfully disagree. Applicants in claim 29 are claiming "A field emission device for *creating a focused electron beam on an anode.*" The electrons in Chen strike on the display screen 42 which is the true anode on which the electron beam is focused. G5 of Chen passes the electron beam through it to the display screen on which it is focused and not the G5 electrode. However, Applicants have amended claim 29 to include the limitations of having the shield layer disposed on a "second dielectric layer" as with the other independent claims. Further, the lens layer is disposed on a "first dielectric layer disposed on the cathode layer." These limitations are not disclosed, taught, or suggested by the art made of record.

Claims 33, 38, 42, and 43 depend directly or indirectly on claim 29 and thus are deemed patentable based at least on the patentability of claim 29, as amended.

Accordingly removal of the rejection under 35 USC 102(b) for claims 29, 33, 38, 42, and 43 and their allowance is respectfully requested.

On page 5 of the Office Action, the Examiner rejected claims 1-11, 13, 15-26, 30-41, 45-56, and 60-66 under 35 USC 103(a) as being unpatentable over Moyer et al (hereafter Moyer). Applicants respectfully traverse this rejection as the Applicants believe the Examiner is not considering Applicants claimed invention as a whole.

As stated previously for Moyer, MPEP 2141.02 states that "a prior art reference must be considered in its entirety, i.e. as a whole, including portions that would lead away from the claimed invention." "In determining the differences between the prior art and the claims, the question under 35 USC 103 is not whether the differences themselves would have been obvious but whether the claimed invention as a whole would have been obvious." If the insight of the inventor is contrary to the understandings and expectations of the art, the structure effectuating it would not have been obvious to those skilled in the art.

Applicants have, however, amended claims 2, 65 and 66 to add the limitations of having a dielectric layer separating the lens layer and the shield layer which is contrary to the teachings of Moyer as discussed previously. By having the layer between the lens layer and the anode held at the same potential as the anode, the electrostatic force between the cathode and anode is significantly reduced. By using a dielectric layer to separate the lens layer and the shield

layer, the shield layer can be placed close to the lens layer. This is contrary to the understandings and expectation of Moyer in that Moyer teaches maximizing the distance between the vacuum bridge (which Moyer uses as a lens) and the gate electrodes (which the Examiner equates to Applicants' lens layer). Indeed, Moyer describes the vacuum bridge as being a self-support structure in order to eliminate having to have a support layer such as the dielectric layer which Applicants are now claiming. Accordingly, one of ordinary skill in the art would not be motivated to modify Moyer to create Applicants' claimed invention.

In addition in conjunction with the 112, 2nd paragraph rejection, Applicants have amended claim 1 to include the limitations of wherein the first voltage (lens layer) is less than a voltage of the cathode and the cathode is less than the second voltage (shield layer and anode). This limitation is not disclosed, taught, or suggested by Moyer. As previously stated, Moyer describes the cathode having a first voltage (e.g. 20V on gate electrodes aka lens layer to Examiner) higher than the vacuum bridge (ground potential on aka shield layer). Further, the amended claim has the first opening and the second opening "about the same diameter" which Moyer does not disclose, teach or suggest. The reason for making the two holes approximately the same diameter is to minimize the electrostatic force attraction between the cathode and anode while still allowing the electron beam to pass through the shield layer. If the shield layer opening were made larger such as shown in Moyer to be about the pixel size, much of the electrostatic attractive force would remain such as mentioned in the description of Figs. 1A and 1B where the shield does not cover all of the focusing lens. Also, claim 1 includes the limitation of wherein the first distance is between one and one half the sum of the second distance and the third distance. Moyer contrarily tries to maximize the distance between the vacuum bridge and the cathode, whereas the Applicants are restricting the distance to between 1 to 2 times the distance of the lens from the cathode. Accordingly, Moyer does not anticipate or make obvious Applicants claim 1, as amended.

Further as discussed previously, independent claims 12, 29, 44, and 59 have been amended to further distinguish over the art made of record, including Moyer. Applicants believe that based on these amendments, their claims are patentable over Moyer, alone or in combination with the art made of record.

Claims 3-11 depend upon claim 1 and are deemed patentable based at least on the patentability of claim 1, as amended.

Claims 13 and 15-26 depend upon claim 12 and are deemed patentable based at least on the patentability of claim 12, as amended.

Claims 30-41 depend upon claim 29 and are deemed patentable based at least on the patentability of claim 29, as amended.

Claims 45-56 depend upon claim 44 and are deemed patentable based at least on the patentability of claim 44, as amended.

5 Claim 60 has been cancelled and its limitations incorporated into claim 59.

Claims 61-64 depend upon claim 59 and are deemed patentable based at least on the patentability of claim 59, as amended.

10 Accordingly, claims 1-11, 13, 15-26, 30-41, 45-56, and 60-66 are believed patentable over the art made of record. Withdrawal of the rejection under 35 USC 103(a) and their allowance is respectfully requested.

On page 14 of the Office Action, the Examiner rejected claims 30-32, 34-37 and 39 under 35 USC 103(a) as being unpatentable over Chen. As described earlier, Applicants have amended claim 29 to further define and differentiate their invention over Chen and thus claims 30-32, 34, 37 and 39 which are dependent on claim 29 are deemed patentable based at least on the patentability of claim 29, as amended. Withdrawal of the rejection under 35 USC 103(a) and allowance of these claims is respectfully requested.

20 The prior art made of record but not relied upon by the Examiner has been reviewed, but is no more pertinent to Applicants' invention than the cited references for the reasons given above.

25 Applicants believe their claims as amended are patentable over the art of record, and that the amendments made herein are within the scope of a search properly conducted under the provisions of MPEP 904.02. Accordingly, claims 1-17, 19-59, and 61-66 are deemed to be in condition for allowance, and such allowance is respectfully requested.

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